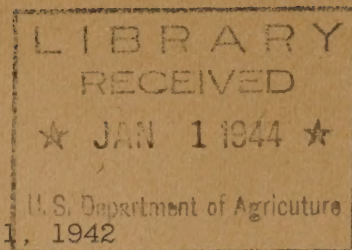


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UNITED STATES DEPARTMENT OF AGRICULTURE
EXTENSION SERVICE
1108 Post Office Building
Chicago, Illinois



Reserve

Extension Service and
Agricultural Marketing Administration
Cooperating

September 1, 1942

BRIEF OUTLINE OF SOYBEAN GRADING
Prepared for country grain dealers and soybean producers

- A. Secure a representative sample of the grain. (See reference note 1)
- B. Examine each probing for musty, sour or commercially objectionable foreign odors, insects injurious to stored grain and heating and hot grain.
- C. Determine the moisture content. (See reference note 2)
- D. Determine the dockage content. (See reference note 3)
- E. Make the weight per bushel test on the dockage-free sample.
- F. Examine for stones and cinders in the dockage-free grain. When more than 7 stones and/or cinders are present in the dockage-free sample (1 1/8 to 1 1/4 quarts) the soybeans are graded Sample Grade.
- G. Establish the class, i.e. yellow, black, mixed, etc. (See reference note-4)
- H. If splits, damaged kernels, or foreign material other than dockage are present in the soybeans in a quantity that may affect the grade, an analysis is made for these factors. (See reference notes 5, 6, 7 and 8)
- I. The final grade of the sample is the lowest grade on any factor. (See grade requirements p. 4)

REFERENCE NOTES

Reference Note 1.

Probing

For bulk grain in cars, trucks or wagons, sample with a standard grain probe in five or more places, well distributed in different parts of the receptacle.

Reference Note 2.

Moisture

If you have an electric moisture meter such as the Tag-Heppenstall or Steinlite, use a revised conversion chart effective September 1, 1942. With a Brown-Duvel tester use 100 grams of soybeans in 150 cc of oil and cut off the heating element at 173°C.

Reference Note 3.

Dockage

Use a representative portion of the grain of sufficient quantity to provide $1 \frac{1}{8}$ to $1 \frac{1}{4}$ quarts of dockage-free grain. Determine the quantity by weight and record.

Place $\frac{1}{4}$ of this portion on a 20-gage metal hand sieve having round-hole perforations $\frac{8}{64}$ inch in diameter* and sieve the soybeans in the following manner:

Hold the sieve in both hands directly in front of the body with elbows close to the sides. Hold the sieve level and in a steady sieving motion, move the sieve from right to left approximately 10 inches, and return from left to right to complete the operation. Repeat the complete operation 15 times. Continue the operation on each of the other three similar sized portions of the sample, emptying the bottom pan after each portion is sieved.

THE DOCKAGE WILL THEN CONSIST OF ALL THE MATERIAL THAT PASSED THROUGH THE HAND SIEVE.

Weigh the dockage removed and determine the percentage based on original weight of the portion before dockage was removed. If less than 1%, disregard. If 1% or more state in terms of whole percent. A fraction of a percent is disregarded in assessing dockage.

*This is a new sieve adopted September 1, 1941, and not the $\frac{10}{64}$ inch sieve used for foreign material before that date.

Reference Note 4.

Classes

The yellow class of soybeans is the most common in the principal commercial area. There are occasional admixtures of black or brown or bicolored soybeans in yellow soybeans and if over 5% of such soybeans are present the grain is classed as Mixed Soybeans.

Black, brown, or bicolored soybeans may also affect the grade.

The soybeans in Grade No. 1 of each of the classes Yellow Soybeans and Green Soybeans may contain not more than 2 percent, and the soybeans in Grade No. 2 of each of these classes may contain not more than 3 percent of Black, Brown, or bicolored soybeans, singly or combined.

Reference Note 5.

Size of Portion to Analyze

The analyses for class, splits, damaged kernels and foreign material other than dockage may be made on one representative portion of about 250 grams from the sample of dockage-free soybeans.

REFERENCE NOTES (Cont)

Reference Note 6.Splits

Splits are pieces of kernels of soybeans that are not damaged. If 1/4 or less of the bean is broken off it is not considered as split. A slotted sieve may be used to facilitate the separation.

Reference Note 7.Damaged Kernels

Damage Must be Distinct. - A soybean or other grain is materially damaged for inspection and grading purposes only when the damage is distinctly apparent and of such character as to be recognized as damaged for commercial purposes.

Cross Section of Kernels. - In the practical analysis for damaged, it will be necessary to cross section a number of kernels with a sharp knife or razor blade before deciding if they are in fact damaged kernels.

Frost Damage. - Frosted soybeans which are discolored in cross section to a green or amber or greenish-brown color, and frosted soybeans which have a glassy, wax-like appearance, are considered as damaged.

Immature Damage. - A soybean that is immature from any cause is considered as damaged when a cross section of it shows an intense green color or when it is green in color and of a mealy or chalky consistency.

Note. When a soybean is plump and well-developed and a cross section of it shows it to be firm in texture although green in color, it is considered as sound.

Heat Damage. - A soybean or other grain which has been damaged by external heat or as the result of heating caused by fermentation so that a cross section of it shows a brown or black color is considered as damaged.

Sprout and Other Damage. - Sprouted soybeans and soybeans which are materially damaged from causes other than those listed are considered as damaged.

Stained and Mottled. - Soybeans which are stained or mottled on the surface or seed coat by weather and/or disease, but which are not damaged or discolored internally or in cross section, are considered as sound.

Slight Surface Mold. - Soybeans having surface mold growths which have not penetrated the soybeans sufficiently to injure them shall be considered as sound, provided the soybeans are otherwise sound.

Reference Note 8.Foreign Material Other Than Dockage

This consists of coarse material such as pods, straw, corn and large weed seeds not separated from the sample by the dockage sieve.

GRADE REQUIREMENTS FOR SOYBEANS 3/

Grade Number	Minimum test weight per bushel	Maximum limits of -				Foreign Material other than dockage
		Moisture	Splits	(soybeans and other grains)	Damaged Kernels	
	Pounds	Percent	Percent	Percent	Percent	Percent
1 <u>1</u> /	56	13.0	10	2		1
2 <u>1</u> /	54	14.0	15	3		2
3	52	16.0	20	5		3
4 <u>2</u> /	49	18.0	30	8		5
Sample Grade	Sample grade shall include soybeans of any of the classes Yellow Soybeans, Green Soybeans, Brown Soybeans, Black Soybeans, or Mixed Soybeans, which do not come within the requirements of any of the grades from No. 1 to No. 4, inclusive; or which contain stones and/or cinders; or which are musty or sour or heating or hot; or which have any commercially objectionable foreign odor; or which are otherwise of distinctly low quality.					

1/ The soybeans in Grade No. 1 of each of the classes Yellow Soybeans and Green Soybeans may contain not more than 2 percent, and the soybeans in Grade No. 2 of each of these classes may contain not more than 3 percent of Black, Brown, or bicolored soybeans, singly or combined.

2/ Soybeans that are badly weathered or badly stained shall not be graded higher than No. 4.

3/ See latest revision of "Handbook of Official Grain Standards of the United States" for the complete standards for soybeans.

This pamphlet is a summary of how soybeans are graded under the United States Grain Standards Act.

For further information on grading soybeans consult any licensed grain inspector or Federal grain supervisor.